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Doing as Well as One's Parents? Tracking Recent Changes in Absolute Income Mobility in Canada

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^{r} revised
x suppressed to meet the confidentiality requirements of the *Statistics Act*
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F too unreliable to be published
* significantly different from reference category ($p < 0.05$)

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Doing as Well as One's Parents? Tracking Recent Changes in Absolute Income Mobility in Canada

by Yuri Ostrovsky, Social Analysis and Modelling Division

This article in the *Economic Insights* series provides Canadian evidence of recent changes in intergenerational income mobility in Canada. The study uses a unique Canadian database that directly links children and their parents and provides information on their incomes. The analysis focuses on absolute income mobility—often seen as an indicator of economic opportunity in a society. The study suggests that the rates of absolute mobility measured at age 30 have remained stable for Canadians born between 1970 and 1984.

Introduction

This *Economic Insights* article examines recent changes in intergenerational income mobility in Canada, focusing specifically on changes in the rate of absolute income mobility, i.e., the share of young Canadians whose family income was at least as high as that of their parents when they were the same age. The analysis focuses mainly on children who were born from 1970 to 1984 and compares their family income at age 30 (observed from 2000 to 2014) with that of their parents when they were the same age. It uses a unique Canadian database that directly links children and parents, providing information on their family incomes over almost four decades. The analysis is repeated at age 40 for earlier cohorts of children and parents.

A recent *New York Times* article (New York Times 2016) drew attention to a study of absolute income mobility in the United States (Chetty et al. 2016). According to the study, during the latter half of the twentieth century a declining share of 30-year-old Americans had a family income that was at least as high as that of their parents when they were the same age. Chetty et al. estimate that at age 30, 90% of Americans who were born in 1940 had incomes that matched or exceeded those of their parents when they were 30 years old, while this was the case for just 50% of those born in 1980. Based on this trend in intergenerational income mobility, the authors conclude that generational prospects have declined markedly in the United States.

Although this Canadian study also analyzes rates of absolute income mobility, the results cannot be compared directly with those of the U.S. study because of important data and methodological differences.[1] Nevertheless, the attention drawn to Chetty et al. underscores the importance of the issue, and some of their findings provide a partial reference point for this analysis. In particular, in contrast to the significant decline observed for the 1980 birth cohort relative to the 1970 birth cohort in the United States, little change in rates of absolute intergenerational income mobility was evident across the Canadian birth cohorts, aside from mild pro-cyclical fluctuations.

Data, sample and method

The data for this study are from the Intergenerational Income Database (IID), a linked administrative database composed of two main components. The first component is a family file in which children who were aged 16 to 19 in 1982, 1984, 1986, 1991, 1996 or 2001 were matched with their parents. To be included in the IID, a child had to: (a) be aged 16 to 19 in one of those years; (b) have a social insurance number (SIN) at that time; and (c) reside with at least one parent at that time. Weights were applied to ensure the representativeness of the sample.[2]

The second component of the database is information from income tax returns over the 1978-to-2014 period. The direct matches between children and parents, combined with 37 years of income data, makes it possible to directly compare the incomes of (adult) children and their parents.

This analysis begins with an examination of the incomes of children and their parents at age 30. The period for which income data are available—1978 to 2014— necessarily restricts the sample to children whose parents were born in 1948 or later, as the oldest of them turned 30 in 1978—the first year for which income data are available. (A small number of parents who were younger than age 19 when the child was born are also excluded.) Thus, the first cohort of children consists of those born in 1970, who turned 30 in 2000. Their parents were born from 1948 to 1951, were aged 19 to 22 when the child was born, and had

1. For example, Chetty et al. use U.S. Census data from 1940 to 1980 to measure parents' income. Canadian Census data over this period do not provide sufficient detail to construct a comparable measure. This and other differences necessitate a different approach to estimating rates of absolute intergenerational income mobility in Canada.
2. See Cook and Demnati (2000) for details. The weights are constructed using T1 Family File and census data to correct for undercoverage resulting from the IID sample selection. The weighted IID sample is representative of the total Canadian population.

their 30th birthday in the years from 1978 to 1981 (Table 1). Subsequent cohorts of children and parents were identified, usually at two-year intervals. The last cohort of children were born in 1984, and hence, were aged 30 in 2014—the last year in which income is observed. Their parents were born from 1951 to 1965, were aged 19 to 33 when the child was born, and had their 30th birthday in the years from 1981 to 1995.

Given the structure of the data file and sample selection, the parents of the 1970 cohort were younger when their child was born than were the parents of the 1984 cohort. This issue is addressed below.

Adjusted family incomes at age 30 were calculated from income tax returns. For (adult) children who were married[3] by age 30, family income was the sum of the spouses' total before-tax income divided by two. If the child was married at age 30 but his or her spouse's SIN was not provided or could not be matched to a tax return that year, the spouse's income was set to zero. The family income of single children at age 30 was simply their total before-tax income that year.

The family income of parents at age 30 was calculated in much the same way. If two parents were present, total income was the sum of their total before-tax income divided by two. If the father was aged 30 in 1978 and the mother in 1980, the higher of these two family incomes was used for the calculation. If a 30-year-old parent reported being married but his or her spouse did not file a tax return, the spouse's income was set to zero. If only one parent was present, the total family income was the total before-tax income of that parent.

In the U.S. study, family income was not adjusted for the number of adults in the family. This measure—unadjusted family income—was also considered in the current analysis. Unadjusted family income is the combined income of all adults in the family. However, for two reasons, family income adjusted for the number of adults in the family is preferred. First, age at first marriage has risen, so the percentage of individuals who were not married or in a common-law union at age 30 was higher among the children than among their parents.[4] Because of this generational difference in marriage rates, adjusted family income is likely to be a more accurate measure of a family's financial well-being. The second reason relates to a fundamental characteristic of the sample: by definition, all parents in the sample had children when they were 30, so it was likely that they were married at that age. In contrast, there was no requirement for the children in the sample to have offspring, so at age 30, they would be less likely than their parents to be married. For these reasons, the study primarily focuses on family income adjusted for the number of adults.

All income figures were converted to constant 2015 dollars using the all-items Consumer Price Index (CPI) series.

The absolute income mobility rates for each birth cohort of children M_c, were calculated directly as the share of children whose family income was at least as high as that of their parents

$$M_c = 100\% \times N_c^{-1} \sum_i 1\left\{y_{ic}^k \geq y_{ic}^p\right\},$$

where N_c is the number of children in cohort c, y_{ic}^k is the child's family income at age 30, and y_{ic}^p is the parent's family income at the same age. To calculate absolute income mobility rates corresponding to each percentile of parental income, the parents of the children in each cohort were ranked by their income and assigned to percentiles.[5] Percentile-specific rates of absolute income mobility were then calculated by applying the equation above to the parents and their children within each percentile.

Results

Chart 1 shows absolute income mobility rates for children born between 1970 and 1984. Based on adjusted family income, absolute income mobility was higher for each cohort born between 1970 and 1977 than for the preceding cohort: 59% for

Table 1
Structure of sample of children and parents at age 30

Child's birth cohort	IID cohort	Age in IID cohort year	Parent's birth year	Parent's age when child born	Years parent's income observed	Year child's income observed
1970	1986	16 years	1948 to 1951	19 to 22 years	1978 to 1981	2000
1972	1991	19 years	1951 to 1953	19 to 21 years	1981 to 1983	2002
1974	1991	17 years	1951 to 1955	19 to 23 years	1981 to 1985	2004
1975	1991	16 years	1951 to 1956	19 to 24 years	1981 to 1986	2005
1977	1996	19 years	1951 to 1958	19 to 26 years	1981 to 1988	2007
1979	1996	17 years	1951 to 1960	19 to 28 years	1981 to 1990	2009
1980	1996	16 years	1951 to 1961	19 to 29 years	1981 to 1991	2010
1982	2001	19 years	1951 to 1963	19 to 31 years	1981 to 1993	2012
1984	2001	17 years	1951 to 1965	19 to 33 years	1981 to 1995	2014

Note: Income is measured at age 30.
Source: Statistics Canada, Intergenerational Income Database (IID).

3. "Married" includes both legally married and common-law couples.
4. In 1981, at age 30, 77% of Canadians were married; in 2011, the percentage was 64% (author's calculations based on census data).
5. The income percentiles were computed for weighted income distributions to account for sample selection in the IID.

the 1970 cohort and 67% for the 1977 cohort. In other words, when they reached age 30, 59% of children born in 1970 had a family income that was equal to or higher than that of their parents when they were 30 years old, while for children born in 1977, the corresponding figure was 67%.

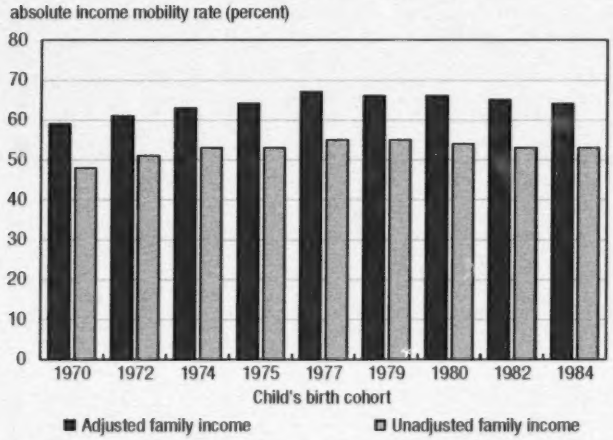
For children born in 1979, 1980, 1982 or 1984, absolute income mobility rates by age 30 ranged from 66% to 64%. The modest decline across these later cohorts was likely related to the economic recession in 2008 and 2009. The latter is the year in which the 1979 birth cohort reached age 30. Because the incomes of all children in a particular cohort were measured in the same year (the year they turned 30), their incomes were more sensitive to business cycle fluctuations than were those of their parents.[6]

The cross-cohort pattern of changes in the rate of absolute income mobility was similar when the computations were based on the unadjusted family income (Chart 1). However, mobility rates were lower compared with those based on the adjusted family income: 48% for the 1970 cohort, 55% for the 1977 cohort, and 53% for the 1984 cohort. As mentioned above, unadjusted family income is strongly correlated with marital status, so the lower rates likely reflect the lower percentages of children who were married or in a common-law union at age 30, compared with their parents.

These results suggest that overall rates of absolute income mobility for the 1970 cohort were somewhat lower in Canada than in the United States.[7] However, the U.S. estimates show a substantial decline in rates among later cohorts, whereas Canadian rates remained stable. As a result, mobility rates for the 1984 cohort were similar in Canada and the United States when calculated using either income definition.

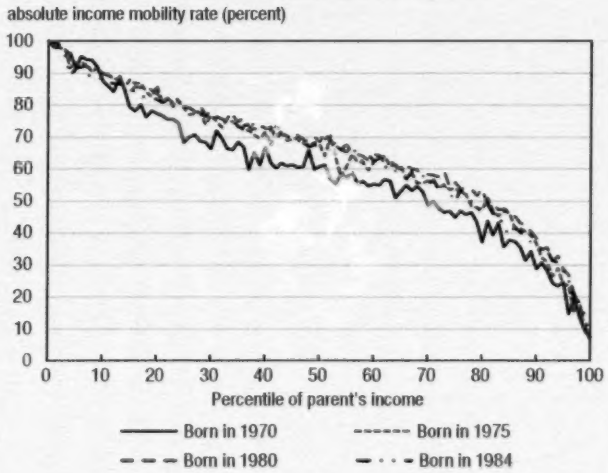
In addition to the overall rate of absolute income mobility, rates were calculated for children in the 1970, 1975, 1980 and 1984 cohorts according to their parents' location in the income distribution (i.e., by income percentile) when they were age 30 (Chart 2). Within each birth cohort, children with parents in the lowest income percentiles were the most likely to have a higher family income than their parents at age 30, while the opposite was true for children whose parents were in the highest income percentiles. Furthermore, for children whose parents were between the 20th to 80th percentiles, rates of income mobility were higher among the 1975, 1980 and 1984 birth cohorts than among the 1970 cohort. This suggests that Canada did not experience the marked decline in absolute income mobility among the 1980 cohort relative to the 1970 cohort that was observed in the United States.[8]

Chart 1
Absolute income mobility rate at age 30, by birth cohort of child, adjusted and unadjusted family income, 1970 to 1984



Note: All incomes were converted to 2015 constant dollars using the all-items Consumer Price Index.
Source: Statistics Canada, Intergenerational Income Database.

Chart 2
Absolute income mobility rate at age 30 of children born in 1970, 1975, 1980 or 1984, by percentile of parent's income



Note: All incomes were converted to 2015 constant dollars using the all-items Consumer Price Index. Family income was adjusted for the number of adults in the family.
Source: Statistics Canada, Intergenerational Income Database.

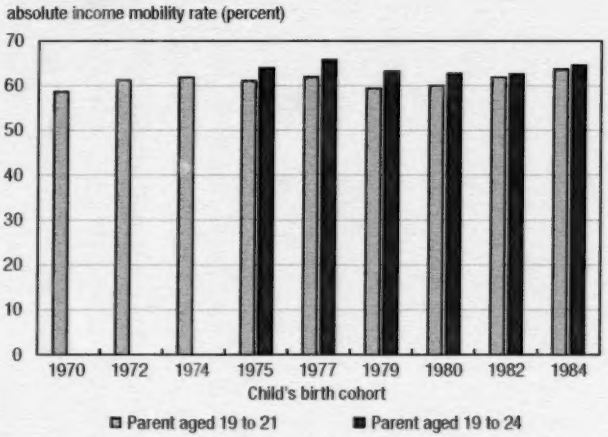
6. This is illustrated by the 1979 birth cohort. Their parents could be aged 30 at any time between 1981 and 1990, so their incomes were a mixture of incomes measured at different points of a business cycle, thereby smoothing out the impact of its lows and highs. In contrast, all children's incomes were measured in 2009 and were, therefore, affected by the weakness of the economy in that year.
7. Based on unadjusted income, the absolute income mobility rate for the U.S. 1970 cohort was 62% (Figure 1B in Chetty et al. 2016). Based on adjusted family income, the rate was 73% (Figure 3D), although in the U.S. study, family income was adjusted for total family size.
8. A similar analysis based on after-tax family income might yield different results, but after-tax family income is not available in the IID.

Two sensitivity analyses were performed to address concerns that, given the composition of the sample dictated by the structure of the IID, parents of earlier birth cohorts were generally younger when their child was born than were parents of later birth cohorts (Table 1). Even though the incomes of all parents were observed at age 30, the lifetime income profiles of parents may vary systematically across cohorts because of differences associated with the timing of family formation.[9]

To shed light on this, income mobility rates were estimated for a subsample of parents who were the same age when their child was born. Because it is not possible to expand the age range of parents in earlier cohorts, it is necessary to restrict the age range of parents in later cohorts ("restricted" sample). The first set of columns in Chart 3 shows rates of absolute income mobility for the restricted sample across cohorts of children whose parents were aged 19 to 21 when the child was born. The income mobility rates for this restricted sample ranged from 59% to 64%. Despite some variability before and after the 1979 cohort, no longer-term trend is discernible. When the analysis was repeated for the broader group of parents who were aged 19 to 24 when their child was born, the results were much the same—rates ranged from 63% to 66%, and no trend is discernible across the decade separating the 1975 from the 1984 cohort. Nonetheless, simply restricting all cohorts to children with younger parents does not eliminate the selection issue in the original sample.

Comparing the family incomes of children and their parents at age 40 is another way to verify the results. The sample for this analysis consisted of children born from 1963 to 1974 who reached age 40 in the years from 2003 to 2014, at which time their family income was observed (Table 2). Their parents had been born between 1938 and 1955, and reached age 40 in the years from 1978 to 1995. When their child was born, the ages of these parents ranged from 19 to 25 among the 1963 cohort, and from 19 to 33 among the 1974 cohort. Hence, the selectivity issue regarding parents' age when the child was born is more modest. Another advantage of comparing children's and parents' incomes at age 40 is that it addresses the "lifecycle bias" in mobility estimates that arises when individuals' incomes are observed when they are still young. Annual income at age 40 to 45 is most representative of lifelong income (Chen, Ostrovsky and Piraino 2017).

Chart 3
Absolute income mobility rate at age 30, by birth cohort of child and selected age group of parent at child's birth, 1970 to 1984, restricted sample



Note: All incomes were converted to 2015 constant dollars using the all-items Consumer Price Index. Family income was adjusted for the number of adults in the family.
Source: Statistics Canada, Intergenerational Income Database.

Table 2
Structure of sample of children and parents at age 40

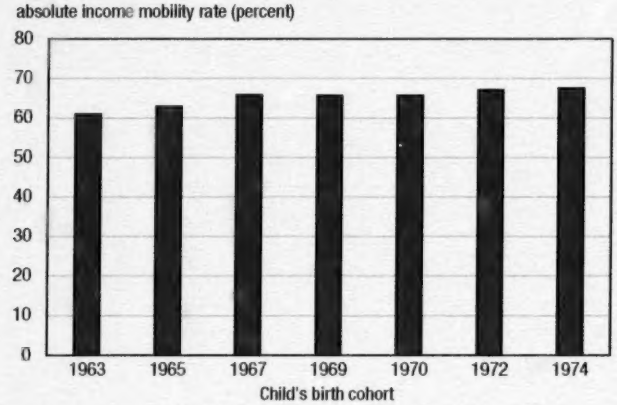
Child's birth cohort	IID cohort	Age in IID cohort year	Parent's birth year	Parent's age when child born	Years parent's income observed	Year child's income observed
1963	1982	19 years	1938 to 1944	19 to 25 years	1978 to 1984	2003
1965	1982	17 years	1938 to 1946	19 to 27 years	1978 to 1986	2005
1967	1984	17 years	1938 to 1948	19 to 29 years	1978 to 1988	2007
1969	1986	17 years	1938 to 1950	19 to 31 years	1978 to 1990	2009
1970	1986	16 years	1938 to 1951	19 to 32 years	1978 to 1991	2010
1972	1991	19 years	1941 to 1953	19 to 31 years	1981 to 1993	2012
1974	1991	17 years	1941 to 1955	19 to 33 years	1981 to 1995	2014

Note: Income is measured at age 40.
Source: Statistics Canada, Intergenerational Income Database (IID).

9. In 1971, 21% of women aged 19 to 22 had children; the corresponding figure for 1981 was 13.5% (author's calculations using census data).

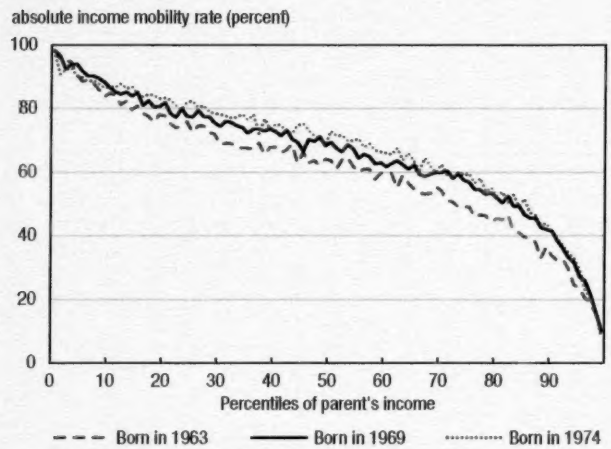
Chart 4 shows rates of absolute income mobility for children in the 1963-to-1974 birth cohorts. By the time they reached age 40, 61% of children born in 1963 had a family income that was equal to or higher than that of their parents when they were the same age. For children born from 1967 to 1974, the figure was 67%. Across the percentile distribution for the 1963, 1969, and 1974 cohorts (Chart 5), rates were higher among the 1974 than among the 1963 birth cohort.

Chart 4
Absolute income mobility rate at age 40, by birth cohort of child, 1963 to 1974



Note: All incomes were converted to 2015 constant dollars using the all-items Consumer Price Index. The family income was adjusted for the number of adults in the family.
Source: Statistics Canada, Intergenerational Income Database.

Chart 5
Absolute income mobility rate at age 30 of children born in 1963, 1969, or 1974, by percentile of parent's income, alternative sample



Note: All incomes were converted to 2015 constant dollars using the all-items Consumer Price Index. The family income was adjusted for the number of adults in the family.
Source: Statistics Canada, Intergenerational Income Database.

Conclusion

This study examines changes in the rates of absolute income mobility in Canada since 2000. Across the cohorts born from 1970 to 1984, and whose income was observed from 2000 to 2014, the percentages of those whose incomes matched or exceeded their parents' at age 30 remained fairly stable. Likewise, for cohorts born from 1963 to 1974, this was the case at age 40. The findings complement recent estimates of relative income mobility in Canada (Chen, Ostrovsky and Piraino 2017; see also Chen, Ostrovsky and Piraino 2016) and are a first step in examining changes in economic opportunity in Canada over time.

Differences in data sources and methodology mean that the results of this study cannot be compared directly with the U.S. study, which used census data from 1940 to 1980 to measure parents' income. Canadian census data for the same period do not have sufficient detail to construct a comparable income measure. Consequently, the historical span of this study is narrower. Also, this study and the U.S. study used different methodologies to establish links between children and parents.

Despite such differences, the results from the United States provide a partial reference point. At age 30, rates of absolute income mobility for the 1970 cohort were somewhat lower in Canada than in the United States. However, subsequent trends in the two countries appear to be quite different. The U.S. estimates show a substantial decline in absolute income mobility, but Canadian rates appear more stable.

Appendix tables

Appendix Table 1
Average family income of children and parents at age 30, by birth cohort of children

	Birth cohort								
	1970	1972	1974	1975	1977	1979	1980	1982	1984
	number								
Child	58,664	33,670	68,784	92,403	122,833	168,028	192,437	207,319	236,975
Mother	53,556	24,863	51,387	67,843	80,029	122,665	144,665	151,986	189,008
Father	50,511	23,464	49,017	64,999	76,616	117,279	138,578	146,638	180,516
	2015 constant dollars								
Child's family income (adjusted)									
Average	40,502	40,463	41,711	43,646	46,277	46,835	47,189	48,454	50,018
10th percentile	12,756	12,423	12,870	13,840	14,912	14,568	14,632	13,983	14,088
25th percentile	23,333	23,565	24,679	26,107	28,025	28,092	28,235	28,453	28,879
Median	37,376	37,404	38,899	40,104	42,878	43,371	43,630	44,692	45,709
75th percentile	52,273	52,239	54,058	55,806	59,134	60,422	60,816	62,678	64,617
Parent's income (adjusted)									
Average	33,683	32,581	32,759	33,487	33,733	34,720	35,366	36,748	37,899
10th percentile	11,373	9,421	10,226	11,158	10,425	11,151	11,771	11,637	12,086
25th percentile	22,225	19,882	20,385	21,350	21,473	22,074	22,701	22,918	23,307
Median	33,004	31,305	31,403	32,140	32,496	33,225	33,763	34,829	35,592
75th percentile	43,174	42,279	42,125	42,639	43,279	44,338	44,966	47,015	48,625

Source: Statistics Canada, Intergenerational Income Database.

Appendix Table 2
Average family income of children and parents at age 40, by birth cohort of children

	Birth cohort						
	1963	1965	1967	1969	1970	1972	1974
	number						
Child	104,830	141,646	174,223	197,837	216,816	200,609	218,168
Mother	75,535	101,609	117,955	136,991	155,993	149,138	176,271
Father	77,014	104,104	122,204	140,863	158,819	151,418	177,056
	2015 constant dollars						
Child's family income (adjusted)							
Average	55,993	58,942	63,821	62,556	63,695	65,585	66,923
10th percentile	16,677	17,340	18,577	17,486	17,961	18,695	19,364
25th percentile	30,736	32,199	34,020	33,815	34,429	36,249	37,290
Median	47,266	49,442	52,314	52,882	53,802	55,924	57,390
75th percentile	67,027	70,307	74,827	76,291	77,199	80,113	82,001
Parent's income (adjusted)							
Average	44,099	44,401	44,389	44,852	45,483	46,030	46,986
10th percentile	17,122	17,268	16,634	15,834	16,301	15,573	16,300
25th percentile	28,192	28,191	27,949	27,655	28,171	27,527	28,140
Median	39,887	40,133	40,144	40,277	40,973	41,258	41,770
75th percentile	53,054	53,531	53,905	54,586	55,588	56,342	57,213

Source: Statistics Canada, Intergenerational Income Database.

References

Chen, W.-H., Y. Ostrovsky, and P. Piraino, 2017. "Lifecycle variation, errors-in-variables bias and nonlinearities in intergenerational income transmission: new evidence from Canada." *Labour Economics*, 44 (January): 1–12.

Chen, W.-H., Y. Ostrovsky, and P. Piraino, 2016. "Intergenerational Income Mobility: New Evidence from Canada." *Economic Insights*, no. 59. Statistics Canada Catalogue no. 11-626-X. Ottawa: Statistics Canada.

Chetty, R., D. Grusky, M. Hell, N. Hendren, R. Manduca, and J. Narang. 2016. *The Fading American Dream: Trends in Absolute Income Mobility since 1940*. NBER Working Paper Series, no. 22910. Cambridge, Massachusetts: National Bureau of Economic Research.

Cook, K., and A. Demnati. 2000. *Weighting the Intergenerational Income Data File*. Ottawa: Statistics Canada. Unpublished report.

New York Times. 2016. "The American Dream, quantified at last." December 8. Available at: http://www.nytimes.com/2016/12/08/opinion/the-american-dream-quantified-at-last.html) (accessed March 31, 2017).